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**RCRA Closure Plan
Building 889 Process Waste System**

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U.S. Department of Energy
Rocky Flats Environmental Technology Site

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Revision 0

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1.0 INTRODUCTION

This plan addresses Resource Conservation and Recovery Act (RCRA) closure of the process waste collection system in Building 889 at the Rocky Flats Environmental Technology Site (RFETS), which includes two concrete floor pits, associated concrete floor trenches and grating, the floor in room 106, and piping that served as collection areas for steam cleaning operations. The plan also addresses closure of underground storage tanks and associated piping that were part of the old process waste collection system. Three other RCRA-regulated units were located in the building: (1) unit 36, a compactor/baler, was never used to manage hazardous or mixed waste; (2) unit 33, the steam cleaner, was removed from the RCRA permit application because it never operated as a RCRA unit; and (3) unit 28, a container storage area, was never used for storage of RCRA-regulated drums. These units will be closed administratively.

Because of RFETS' changing mission from nuclear weapons production to environmental restoration, there is no longer a use or mission for the Building 889 complex. The U.S. Department of Energy Rocky Flats Field Office (DOE-RFFO) has selected Building 889 as a pilot deactivation, decontamination, and decommissioning project. A Proposed Action Memorandum (PAM) will address removal of the shell of the facility and associated structural systems. Assessment of soil contamination under the building (if any) will occur as part of activities associated with investigation of Operable Unit (OU) 9. *and OU 14*
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RFETS personnel will verify that the units undergoing closure have met the closure performance standard, as defined in Section 5.0 of this plan. Concrete pits A and B, the concrete floor trenches and grating, the piping, the floor in room 106, and the underground waste storage tanks will be treated using a debris-rule technology, then removed for disposal.

2.0 FACILITY CONTACT

The RFETS contact for closure activities is:

Manager, Rocky Flats Field Office
U.S. Department of Energy
P.O. Box 928
Golden, Colorado 80402-0928

Phone: (303) 966-2025

3.0 UNIT CLOSURE NOTIFICATION AND CERTIFICATION

Closure of the RCRA units in Building 889 will be conducted as partial closure of the facility. Notification to the director of the intent to close these units will be submitted to the Colorado Department of Public Health and Environment (CDPHE) 45 days prior to the planned start of closure activities.

Within 60 days after completion of closure, the facility will submit to CDPHE certification that the units have been closed in accordance with the approved closure plan. The certification will be signed by the owner or operator and by an independent, Colorado-registered professional engineer.

4.0 REGULATORY REQUIREMENTS

A closure plan for closure of interim status RCRA hazardous waste treatment and storage units at RFETS is required pursuant to 6 CCR 1007-3, Part 265 of the Colorado Hazardous Waste Regulations. This plan addresses the following Colorado hazardous waste regulations: Part 265, Subpart G - Closure and Post-Closure, sections 265.110 through 265.120; Part 265 Subpart J - Treatment Standards for Hazardous Debris, section 268.45; and The Debris Rule, 57 FR 37194, August 18, 1992.

No demonstration of financial responsibility is required, because under current regulations compliance with Part 266 Subpart A "Financial Requirements" is not required for government-owned facilities.

The tanks and associated piping, although part of OU 9, will be closed in accordance with the provisions of this plan.

5.0 CLOSURE PERFORMANCE STANDARD

This closure plan provides for closure of the hazardous waste units in a manner that minimizes the need for further maintenance; controls, minimizes, or eliminates threats to human health and the environment; and eliminates the post-closure escape of hazardous waste and hazardous waste constituents.

The closure will involve the following steps. First, a strippable material will be applied to the concrete surfaces of the pits and trenches to remove any residual radioactive contamination. Following removal of the strippable material, the concrete surfaces will be scarified. The piping and metal grates will be cleaned using a water or steam spray technique. The resulting solutions will be treated in the onsite aqueous waste treatment facility, and the solids will be properly disposed as non-hazardous non-radioactive waste if appropriate.

5.1 Underground Tanks, Concrete Pits, Trenches, and Floor

The underground tanks, concrete pits, trenches, and floor in room 106 will be stripped out during closure and managed in accordance with the debris rule (6 CCR 1007-3 Part 268.45). The closure performance standard for these items will be as follows:

- (1) The concrete surfaces will be removed to a minimum depth of 0.6 cm using one of the physical extraction technologies listed in Table 1 of Part 268.45. Scarification (i.e., scabbling) is one of the allowable extraction technologies for concrete surfaces. During this closure, the Dustless Decontamination System (DDS) or another scarification system will be used. The DDS has the advantage of keeping potentially hazardous (and possibly radiologically contaminated) dust from becoming airborne.
- (2) Additional surface material will be removed as necessary until a clean-debris surface is obtained, which is defined as "the surface, when viewed without magnification, shall be free of all visible contaminated soil and hazardous waste except that residual staining from soil and waste consisting of light shadows, slight streaks, or minor discolorations, and soil and waste in cracks, crevices, and pits may be present provided that such staining and waste and soil in cracks, crevices, and pits shall be limited to no more than 5% of each square inch of

surface area."

5.2 Metal Piping and Grates

Process waste piping within Building 889 that delivered waste to the floor sump pits; metal grates that covered pit A, pit B, and the trenches; piping connecting to the underground tanks; and piping connecting to Building 866 will also be stripped out during closure and managed in accordance with the debris rule. The closure performance standard for the piping will be as follows:

- (1) The piping will be cleaned using the alternative treatment standard of "water washing and spraying" or "high pressure steam and water sprays" from Part 268.45, Table 1, or another appropriate technology from Table 1.
- (2) The debris will be treated until a clean surface is obtained, as defined in Section 5.1.

If any portion of the inner surface of the piping or any portion of the metal grate cannot be cleaned to meet the debris-surface standard, that portion will be cut and disposed as hazardous waste.

A tank information sheet is not provided for the underground tanks because they were part of the old process waste line, which was never included in the RCRA permit application.

6.0 CLOSURE SCHEDULE

6.1 Unit Closure Schedule (Partial Closure of the Facility)

Closure of the units is planned to begin on or before October 1, 1995, assuming CDPHE approval is received before this date. The time required for closure is proposed at 180 days from the time closure begins. If the total time necessary for closure will exceed 180 days, the facility will notify the director within 30 days of knowing that closure will take longer than 180 days (Part 265.113(b)) and at least 30 days prior to the expiration of the 180-day closure period as required in Part 265.113(c).

6.2 Work Control Packages

Work packages (or other appropriate work instruction documents) will be prepared to govern the closure activities. The work package(s) will detail the exact sequence of decontamination activities and any engineering modifications to the piping necessary for the collection of wastewater. The work packages, when complete, will be kept on file at RFETS during implementation of closure activities. In addition to the engineering packages, a detailed work package, which will include health and safety requirements, will also be developed and held on file during closure.

7.0 SPECIFIC CLOSURE ACTIVITIES

Closure activities will be performed to achieve the objectives of the closure performance standard. Closure activities will be implemented emphasizing the protection of human health, the environment, and waste minimization.

The following paragraphs outline the procedures necessary to successfully close the process waste system addressed in this closure plan. The order in which the following procedures are actually implemented may differ slightly from the order in which they are described.

7.1 Unit Description

Building 889 was designed and used as the non-Protected Area (PA) decontamination, size reduction, and repackaging facility and as a data communications hub site based on its location relative to amplifiers in the 800 area, 400 area, and the PA. The general layout of the building is shown in Figure 1, which is provided at the end of the plan. Combustible materials, surplus equipment, and high-efficiency particulate air (HEPA) filters contaminated with low levels of uranium 238 and beryllium were treated in Building 889. Surplus equipment was decontaminated by steam cleaning for reuse on site or for sale through property utilization and disposal (PU&D). Wastewater from steam cleaning drained directly onto sloped floors, which transferred the water into a series of concrete floor pits or trenches. The water was then transferred through process waste piping to two storage tanks in Building 866 and finally to treatment facilities in Building 374. The process waste line floor plan is shown in Figure 2, which is provided at the end of the plan. HEPA filters, combustible wastes, and unusable equipment were compacted, placed in crates, and shipped offsite for disposal.

Originally, the process waste from Building 889 flowed into a two compartment underground holding tank (approximately 1,000 gallons total capacity) located approximately 45 feet west of the building. The general location of the tanks is shown in Figure 3, which is provided at the end of the plan. A cross-section of the tanks is shown in Figure 4. From the tanks, the wastewater was pumped through piping into the plant process waste system.

In 1982, the Building 889 wastewater system was modified. The piping leading to the underground tanks was plugged and piping was laid to Building 866, which contained two new tanks for holding the waste. Wastewater was pumped from Building 866 to the treatment facility in Building 374. Closure of the Building 866 process waste system is addressed as part of a separate RCRA closure plan.

7.2 Application of Strippable Material to Concrete Pits and Trenches

After any required preliminary cleaning, a strippable material will be applied to the surface of the concrete pits and trenches to remove any residual radioactive contamination. The strippable material has the consistency of paint and will be applied in a thin layer over the surface of the concrete. After it has dried, the material will be peeled off, removing any surface contaminants with it. The residue from removal of the strippable material must be characterized and disposed of according to hazardous and mixed waste regulations and RFETS procedures as appropriate.

7.3 Physical Extraction of the Concrete Surface Layer

As previously stated, the debris-rule treatment method of scarification will be used to remove a minimum of 0.6 cm of the concrete surface of sump pits A and B, the trenches, the floor in room 106, and the underground tanks.

Concrete will be removed down to or beyond the 0.6 cm minimum, as necessary, until the clean surface closure performance standard is achieved. If the clean surface standard cannot be achieved after a diligent cleaning effort, the concrete must be characterized and disposed of according to hazardous and mixed waste regulations and RFETS procedures, as appropriate.

Waste generated from the scarification of the concrete surface must be characterized and disposed of according to hazardous and mixed waste regulations and RFETS procedures, as appropriate.

7.4 Stripout of Piping and Grates

The piping and grates in Building 889 and the piping (1) connecting the Building 889 process waste system to Building 866, (2) formerly used to connect the pits to the underground tanks, and (3) connecting the underground tanks to other process waste lines will be disconnected and removed from the ground. The interior of the piping will be cleaned using a high-pressure steam or water spray. The pipe will then be inspected for a clean surface, as specified in the closure performance standard of Section 5.0, using a video inspection technique. Any portion of piping or associated equipment that does not meet the clean surface standard may be cleaned again using the high-pressure steam or water spray and then reinspected to determine if the standard has been met. This process may be repeated up to three times.

If a clean surface cannot be obtained for any of the pipe sections they will be characterized and disposed of according to hazardous and mixed waste regulations and RFETS procedures, as appropriate.

7.5 Stripout of Debris

After the Clean Surface Debris Rule standard has been achieved for sump pits A and B, the trenches, the floor in room 106, and the underground tanks, the associated concrete will be stripped out and disposed of as non-hazardous waste.

7.6 Estimated Liquid Waste Volumes

7.6.1 Estimated Minimum Liquid Waste Volume

The minimum volume of liquid waste will be generated when the initial debris-rule treatment of the process waste lines is performed, and visual inspection demonstrates that the closure performance standard has been achieved. Therefore, no further decontamination of the lines is required.

It is expected that the minimum amount of water generated from these activities would be approximately 180 gallons.

7.6.2 Estimated Maximum Liquid Waste Volume

The estimated maximum volume of liquid waste will be generated when initial visual inspection of the process waste lines indicates that additional decontamination of all the lines is necessary to meet the closure performance standard.

The maximum volume of liquid waste generated will depend on the number of washes and rinses of the system that are necessary to meet the closure performance standard. Each decontamination cycle (wash and rinse) of the system is expected to generate 180 gallons, as in the minimum volume case. The maximum estimate, based on three decontamination cycles of the entire system, would be approximately 540 gallons. If the closure performance standard cannot be achieved with one decontamination cycle, the portion of the system not meeting the closure performance standard will be decontaminated again. The total volume of waste that will be generated will depend on how much of the system does not meet the closure performance standard.

7.7 Estimated Solid Waste Volumes

7.7.1 Estimated Minimum Solid Waste Volumes

The minimum volume of solid waste will be generated during (1) rinsing the process waste lines, (2) scabbling pits A and B and their associated trenches and piping, and (3) scabbling the underground storage tanks. Waste generated during these activities may include concrete fines, personnel protective equipment (PPE), and other miscellaneous solid waste. The minimum amount of solid waste expected to be generated during closure is 2 cubic yards.

7.7.2 Estimated Maximum Solid Waste Volume

The maximum volume of solid waste generated will depend on the amount of concrete that must be scarified to meet the closure performance standard. It is assumed that a maximum number of two decontamination "cycles" (scabbling) will be performed. Therefore, the maximum volume of solid waste expected to be generated will be 4 cubic yards. If the closure performance standard cannot be achieved with one decontamination cycle, the portion of the system not meeting the closure performance standard will be decontaminated again. The total quantity of waste that will be generated will depend on how much of the system does not initially

meet the closure performance standard.

8.0 DISPOSITION OF WASTE

The closure plan is based on the assumption that, as part of closure, all equipment and structures will be decontaminated to levels consistent with the closure performance standard specified in Section 5.0.

The plan also assumes that site waste management and treatment capabilities will be available to receive the unit inventory and the cleanup waste. This includes the wastewaters, which will be transferred to Building 374 for treatment in the wastewater treatment facility. It also includes the debris, which will be disposed in the sanitary landfill, if appropriate. The site waste management capabilities include storage; possible treatment of solid wastes, such as PPE or other soft wastes generated during closure; and disposal in the onsite sanitary landfill.

Consistent with the objective of minimizing wastes generated during closure, facility equipment will be decontaminated where practical. Where this is not feasible, such materials may be disposed of in compliance with local, state, and federal regulations and according to standard operational procedures for handling such wastes.

The disposition of any hazardous or mixed waste from the units undergoing closure will depend on the exact characteristics of the waste and the availability of commercial and DOE RCRA-permitted treatment and disposal facilities. The disposition of all hazardous and mixed waste will be in full compliance with all local, state, and federal hazardous waste regulations applicable at the time of disposal.

The disposition/destination of drummed hazardous waste will depend on the type of waste present in the drum. Treatment of hazardous wastes at RFETS is always the preferred waste treatment alternative. If onsite treatment is not feasible, then the disposition of each waste will depend upon the characteristics of the waste and the capabilities of other designated treatment, storage, and disposal facilities. All wastes will be disposed of in accordance with applicable waste requirements.

Mixed radioactive wastes will be disposed of at an approved facility. Low-level mixed waste

meeting land disposal restriction requirements is currently designated to be shipped to the Nevada Test Site. If this site is unavailable, then another approved DOE or commercial facility will be considered. If facilities do not exist for shallow or deep burial of this waste or for other offsite waste disposal, long-term monitored storage of the waste will be conducted at RFETS until a disposal facility is approved. RFETS shall notify the director if long-term storage is the only waste management option for RFETS mixed wastes. The director's approval for this waste management option will be obtained PRIOR to exceeding approved permitted or interim status storage capacity for any waste type.

All liquid cleaning wastes generated during closure decontamination activities that are compatible with the RFETS wastewater treatment facilities will be treated onsite. Such wastes currently include high and low pH solutions, radioactive solutions, and solutions contaminated with inorganics. Wastes that are reactive, ignitable, or contain high concentrations of organics are incompatible with the RFETS waste treatment facilities. It is currently anticipated that all cleaning wastes will be compatible with the RFETS wastewater treatment facilities. Pretreatment or post-treatment of wastes that are incompatible with the RFETS wastewater treatment system is considered during preparation of the closure work packages and included if required.

Liquid wastes generated during closure will be transferred to Building 374 for treatment. These wastes will be sampled prior to transfer to ensure that they meet the facility's waste acceptance limits.

The volume of waste requiring ultimate treatment or disposal will include the maximum waste volume held in storage and the waste volume generated during the closure decontamination and sampling activities.

During closure activities, all contaminated equipment and structures must be properly disposed of or decontaminated. By removing any hazardous wastes or hazardous constituents during closure activities, the owner or operator may become a generator of hazardous waste and must handle that waste in accordance with all applicable requirements of Part 262 of the regulations.

9.0 SOIL INVESTIGATION AND CRITERIA FOR DETERMINING POST-CLOSURE CARE

The soils under Building 889 are suspected of being contaminated; however these soils are associated with OU 9. The mechanism for addressing OUs is specified in the Environmental Restoration Interagency Agreement (IAG), executed on January 22, 1991. Therefore, soils will not be addressed at the time of closure, and any RCRA post-closure activities necessary after closure will be implemented through the IAG or through the Rocky Flats Cleanup Agreement, currently being negotiated.

10.0 RECORDKEEPING

RFETS shall maintain the following closure records at the facility during closure activities and for a minimum of 30 years following closure certification:

- Records of actions taken to decontaminate equipment or structures and
- Other documentation verifying that RFETS followed the approved closure plan.

11.0 AMENDMENT OF THE PLAN

In conducting closure, unexpected events that occur during the implementation of required closure activities may require an amendment of the existing closure plan. Any request for modification of the closure plan will be made within 30 days of identification of the event that causes modification to be necessary.

FIGURE 1
Building 889 Floor Plan

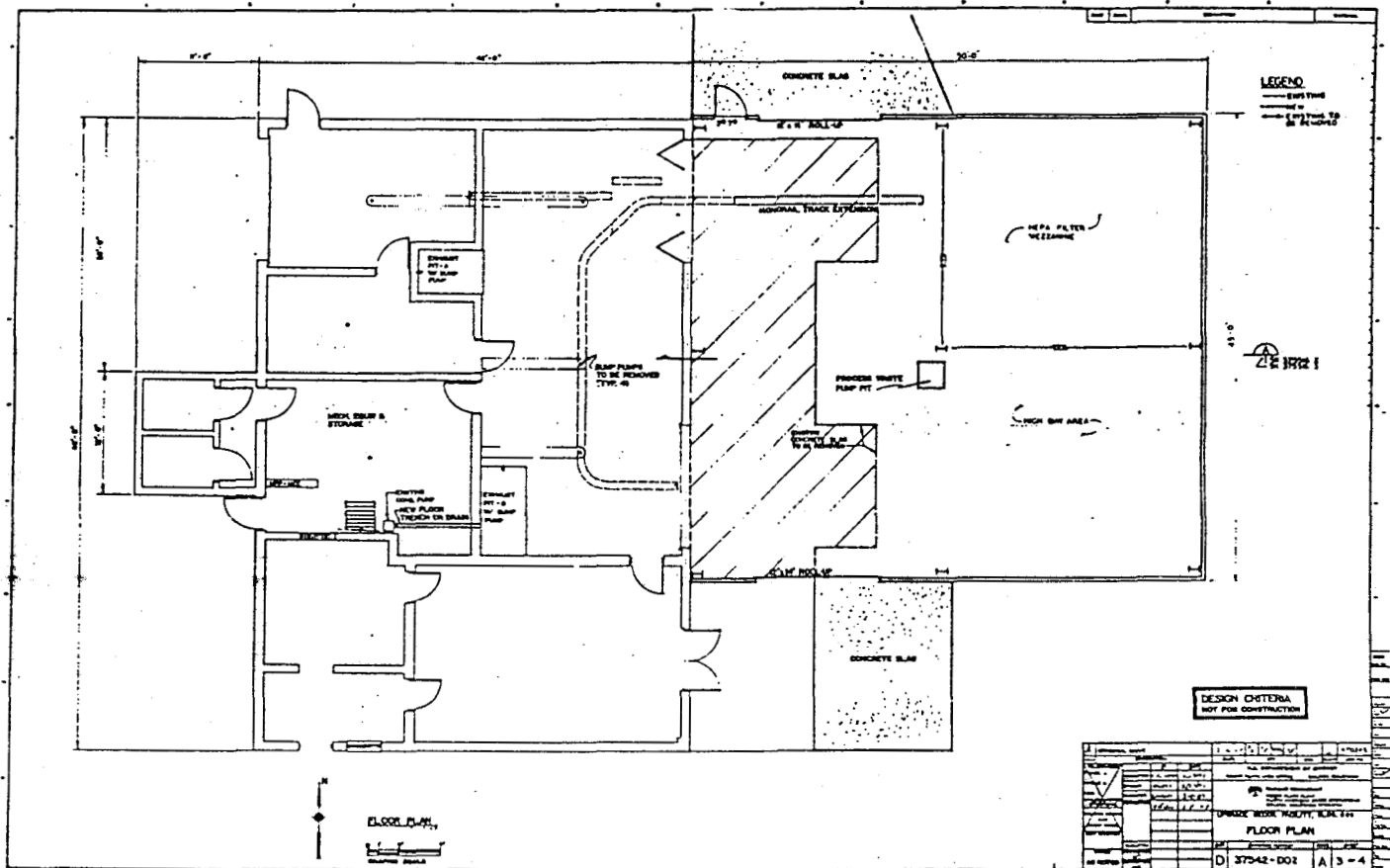
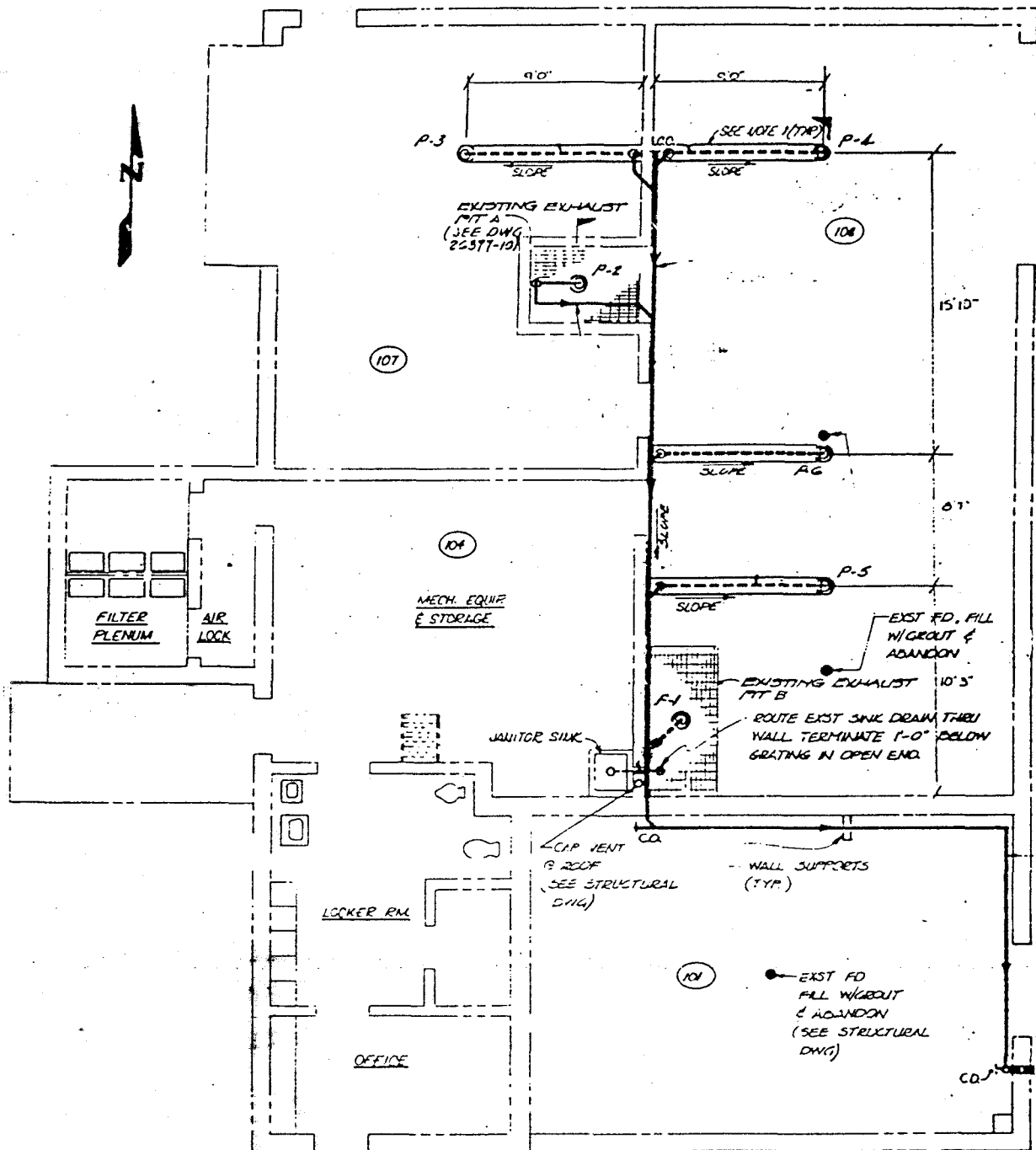


FIGURE 2
Building 889 Process Waste Line Floor Plan



FLOOR PLAN BLDG 889
SCALE: 1/8" = 1'-0"

FIGURE 3
Aerial Location of Tank T-40

